

4.1-4.5 Review Graphing Functions

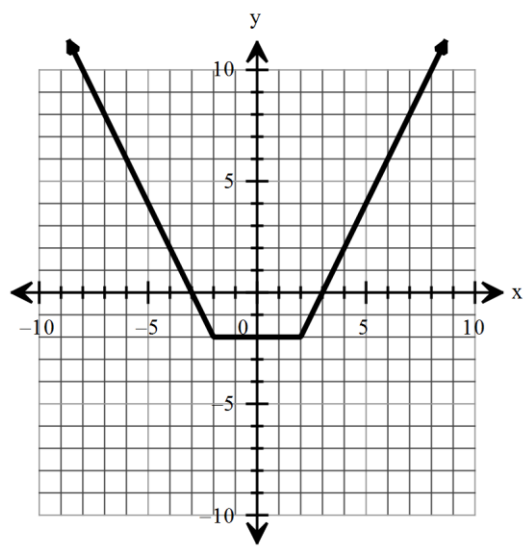
Name _____ Date _____ Period _____

Find the domain of the function algebraically. Write your answer in interval notation. Show work!

1. $f(x) = -3x^2 - 5x + 7$
2. $f(x) = \frac{x+4}{x(x-9)}$
3. $f(x) = \frac{\sqrt{4x-8}}{x^2+5x-50}$
4. $f(x) = -\sqrt{x-3} + 11$
5. $f(x) = x^2 - 10$
6. $f(x) = \sqrt{-x+15}$

Analyze the given function.

7. $f(x) = |x+2| + |x-2| - 6$



Domain	
Range	
x-intercepts	
y-intercept	
Intervals of increasing	
Intervals of decreasing	
Intervals of constant	
Intervals where Positive	
Intervals where Negative	
Local Maximums	
Local Minimums	
Symmetry	
Left End Behavior limit notation	
Right End Behavior limit notation	

Find the horizontal and vertical asymptotes of the function. Show work!

8. $f(x) = \frac{2x+1}{x-5}$

9. $f(x) = \frac{x}{x^2-4}$

10. A football thrown in the air with initial velocity 50 ft/sec is modeled by $h(t) = -16t^2 + 50t + 4$. If the ball falls incomplete what is the real world domain for this model?

Answer: _____

Explain your answer in 1-2 sentences.

11. A hedge x feet wide is planted inside the borders of a garden with dimensions 16 feet by 24 feet. Determine the domain of the area function that describes the reduced garden in terms of x .

Answer: _____

Explain your answer in 1-2 sentences.

12. A square of side x meters is cut out of each corner of a 3 meter by 5 meter piece of cardboard to form a box. Determine the domain of the volume function in terms of x . Show work!

Answer: _____

13. Describe all of the transformations used on the basic function $f(x) = \sqrt{x}$, to obtain the graph of $g(x) = -3\sqrt{x+6} - 1$ and sketch the graph. List the transformations in the correct order and make a table for $f(x)$ and $g(x)$.

f(x)

x	y

g(x)

x	y

Transformations:

y

x

Determine whether each function is even, odd or neither (algebraically). Show work!

14. $f(x) = -x^2 - 5$
15. $f(x) = 8x^5 + x^3 - x$
16. $f(x) = x^3 - 7x^2$

Describe a basic parent function and a sequence (in correct order) of transformations that can be used to produce a graph of the given function.

17. $f(x) = -3\sqrt{x-4}$
18. $f(x) = \frac{1}{2}(x+8)^2 - 3$

Parent function:

Parent function:

Transformations:

Transformations:

Write the equation for the new function that is obtained from the given transformations on the parent function.

19. $f(x) = x^3$: reflect over the y-axis, horizontal shift right 3, vertical shift -6

20. $f(x) = |x|$: reflect over the y-axis, a vertical stretch by a factor of 3

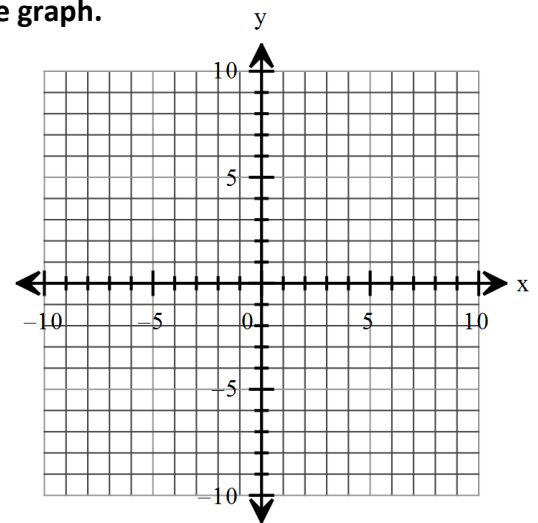
Sketch the graph of the function. Be sure to label three points on the graph.

$$21. f(x) = \begin{cases} x^2 + 2, & \text{if } x < 2, \\ 7, & \text{if } x = 2, \\ x - 3, & \text{if } x > 2 \end{cases}$$

Find: a) $f(-6)$

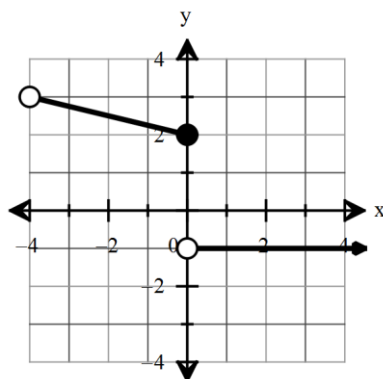
b) $f(2)$

c) $f(8)$



The graph of a piecewise function is given. Write a definition for the function. Find the domain and range.

22.

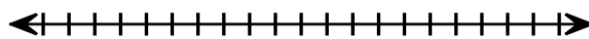


Domain: _____

Range: _____

Find the domain, range, asymptotes, intercepts and holes (if any) of each function and then graph the function. Show work!

23. $f(x) = \frac{x^2 + 2x - 8}{x^2 + 2x - 3}$



Domain _____

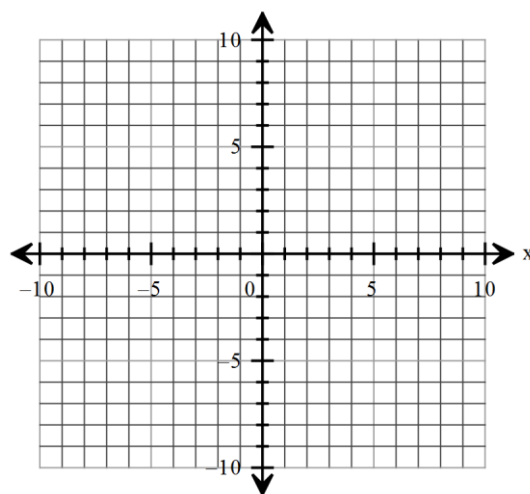
Range _____

Vertical asymptotes _____

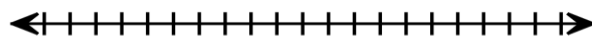
Horizontal or oblique asymptote _____

x-intercept(s) _____

y-intercept(s) _____ hole _____



24. $f(x) = \frac{x-1}{x^2 + 4x - 5}$



Domain _____

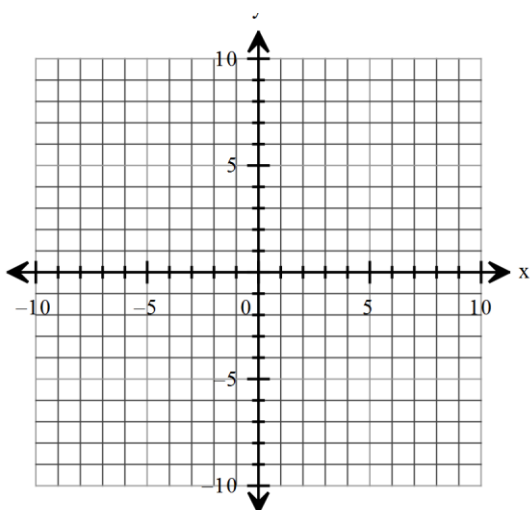
Range _____

Vertical asymptotes _____

Horizontal or oblique asymptote _____

x-intercept(s) _____

y-intercept(s) _____ hole _____



25. Evaluate the limit based on the graph of $f(x)$ shown

$\lim_{x \rightarrow -3^+} f(x) =$

$\lim_{x \rightarrow -3^-} f(x) =$

$\lim_{x \rightarrow \infty} f(x) =$

$\lim_{x \rightarrow -\infty} f(x) =$

